Integrated PLC Engineering Software
iQ Platform Compatible
Programmable Controller Engineering Software
MELSOFT GX Works2
Integrated
PLC Engineering
Software

Ultimate evolution of PLC engineering software

International Standard IEC 61131-3 compliant
Now an easy-to-use engineering software is no surprise.
In addition to its sophisticated usability, the engineering software GX Works2 deploys
the global mainstream concepts of "grouping" and "structuring"
for fundamental improvement of programming efficiency.
The world-standard engineering style begins with GX Works2.

GX Wor
International Standard IEC 61131-3 compliant

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ks2
Concept 1: All-in-one package

All capabilities required for PLC engineering including the configuration function of the intelligent function module and simulation function are integrated in a single package. The all-in-one GX Works2 package supports entire engineering such as system design, programming, debug and maintenance.

Concept 2: Make full use of MELSEC PLC modules

GX Works2 enables you to easily make a full use of high-function and high-performance CPUs and modules.

Concept 3: Inherits customer assets

Your legacy GX Developer programs can be used in GX Works2 without any modification. Also, programs written by GX Works2 to the programmable controller can be read using GX Developer. For example, even if GX Developer is installed in a production site's PC, the data created and read with GX Developer can be used with GX Works2 installed in a development office's PC.

Concept 4: Sophisticated usability

The favorable GX Developer functions have been incorporated to GX Works2 and the usability furthermore improved. The performance has also been refined thus improving each operation to perform smoothly with a high response. The usability will continue to advance.

Concept 5: International Standard IEC 61131-3 compliant

GX Works2 conforms to the engineering tool international standard IEC 61131-3, and supports structured programming with grouped parts. Programming languages including SFC, ST and ladders, can be used according to each application. In addition, several languages including SFC, ST and ladders can be used together in one program.
Concept

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GX Developer GX Works2

Create projects in GX Developer
Programming tool

Read and use them in GX Works2

International Standard IEC 61131-3

compliant

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AnyWire

Supporting various automation devices with seamless control for any network.

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Facilitating project management

Promoting program standardization

Powerful collaboration and support of FA devices

Improving design and debug efficiency

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**Ultimate "Easy-to-use" user interface**

The engineering software GX Works2 has been developed to allow programming, debugging and maintenance operations, etc., to be carried out easily by anyone with intuitive operations. Its comfortable operation environment further improves design efficiency.
Ladder input

Simple key operation makes an easy ladder programming

A ladder is easily modified and edited with convenient key combinations such as [Alt]+[←]/[→] or [Alt]+[↑]/[↓].

Edit ladder
[Alt]+[←] ... K4Y0→D0→MOV
[Alt]+[→] ... MOV→D0→K4Y0

Change device number
[Alt]+[↑] ... K4Y0→K4Y1→K4Y2
[Alt]+[↓] ... K4Y2→K4Y1→K4Y0

Click Undo button.

Undo

Undo up to 30 previous input steps with Undo ([Ctrl]+[z]).

Easy to view ladder with no wrapping

The number of contacts in a single line can be changed to 9, 11, 13, 17 or 21.

Easy-to-read ladder display

Edit lines with simple key operation

Lines are edited only with the keyboard keys. There’s no need to switch to the conventional line editing mode.

Press [←]+[→] or [↑]+[↓] to draw a line.
Press [←]+[↓] to draw a line to the coil consecutively.
(Press [←]+[↑] to draw a vertical line consecutively.)
3 Easy ladder edit with command/label input support

Ladders are easily edited just by choosing. The information of arguments are also shown to reduce errors during ladder input.

- Explanation of suggested instruction
  The details of each instruction can be understood at a glance from explanation of each.

- Explanation of argument type
  Explanations of arguments are also displayed so that a ladder can be edited without any help.

- Auto suggest instructions
  Suggestions appear when the first character is input. Easily edit the ladder even when there are too many instructions to remember.

- Explanation of label
  Suggested labels are displayed. Edit the ladder without remembering all labels.

POINT
This function saves time to display and confirm help information during command input. Pressing the [F1] key displays the instruction help screen.

4 Easy continuous device search

By specifying the search option and pressing the Enter key, the user can search for suggestions. This is particularly useful when a certain device is used many times in the program.

- Search for a label is conducted by partially entering it.

- Continuous search
  By specifying the option and pressing the Enter key, search for the specified device is made continuously.

- Pressing Enter key searches for the next "Auto" candidates. (Cursor moves to it.)

POINT
Search for devices can also be made in the similar manner by switching the ladder display to the device display.
5 Cross Reference interacts with ladder display

Cross Reference function is used to search for devices/labels used in the project. The docking windows enable to display the Cross Reference window and program editor vertically.

- Automatically displays the Cross Reference information of the device at the cursor position.
- Several reference sites can be set for the search.
- Jump to the step using this device/label.

6 Inline ST directly writes operation processing.

Operation processing is written directly in a ladder with Inline ST (structured text). Creation of a multi-line ladder or FB (Function Block) in another program editor is not necessary anymore.

- Example of numeric operation
- Example of character string processing

Troublesome numeric operations and character string processing are described easily.
7 Enhancing program readability with wrapping ladder block

By wrapping a ladder block, a long and hard-to-read ladder program is displayed in a compact form.

- Right-click and select "Non-Display Ladder Block" from the menu to hide the ladder block.
- Right-click and select "Display Ladder Block" from the menu to display the hidden ladder block.

8 Easier to view SFC diagram and Zoom

The scale of the window is changed to display the SFC diagram and Zoom. Since the changed scale is retained, the windows are always displayed with the same layout.

- How to display is specified by selecting the SFC diagram and Zoom.
- The displaying scale is selected to the SFC diagram and Zoom. (Common to all blocks)
- Adjust even the window size in SFC block units.
- Set the Zoom display style to 5 contacts for an easy-to-read font size.
Comment

1 Utilizing sample comment saves time to input comments
Pre-prepared special relays/registers of the CPU as well as the buffer memory/XY signal of the intelligent function module is copied as sample comments in the project comments.

![Diagram](Image)

- Choose the intelligent function module to utilize comment
- For X/Y comment
- For buffer memory
- For special relay/register

Right-click Right-click

Click! Click!

Comments are easily utilized by right-clicking menu.

Time for entering device comments are greatly saved by utilizing sample comments.

POINT

1. Improving design and debug efficiency

2. Distinguish similar devices without bother
Set a word device comment for each bit to display the contents of the comment on the ladder.

Many more device comments are handled.
3. **Easily copy and utilize device comments**

Device comments are copied by copying the ladder of the ladder editor between projects. When copying a ladder onto another program, the device comments in the ladder are also copied.

![Copy the ladder](image1)

**Device comment in copy source program**

<table>
<thead>
<tr>
<th>Device Name</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>X0</td>
<td>X0 (Comment for MAIN)</td>
</tr>
<tr>
<td>X1</td>
<td>X1 (Comment for MAIN)</td>
</tr>
<tr>
<td>X2</td>
<td>X2 (Comment for MAIN)</td>
</tr>
<tr>
<td>X3</td>
<td>X3 (Comment for MAIN)</td>
</tr>
<tr>
<td>X4</td>
<td>X4 (Comment for MAIN)</td>
</tr>
<tr>
<td>X5</td>
<td>X5 (Comment for MAIN)</td>
</tr>
</tbody>
</table>

**Device comment in copy destination program**

<table>
<thead>
<tr>
<th>Device Name</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>X0</td>
<td>X0 (Comment for MAIN)</td>
</tr>
<tr>
<td>X1</td>
<td>X1 (Comment for MAIN)</td>
</tr>
<tr>
<td>X2</td>
<td>X2 (Comment for MAIN)</td>
</tr>
<tr>
<td>X3</td>
<td>X3 (Comment for MAIN)</td>
</tr>
<tr>
<td>X4</td>
<td>X4 (Comment for MAIN)</td>
</tr>
<tr>
<td>X5</td>
<td>X5 (Comment for MAIN)</td>
</tr>
</tbody>
</table>

When the program is pasted, the comment is simultaneously copied.

4. **Utilize device comments created in other languages**

Japanese, Chinese (Simplified and Traditional), and Korean comments can be displayed in GX Works2 English Edition. The function comes useful when working with offices abroad.

![Copy the ladder](image2)

**GX Works2 Japanese Edition**

**GX Works2 English Edition**

Project file used in GX Works2 Japanese Edition (with Japanese comments)

The Japanese comments are viewed in GX Works2 English Edition.
Parameter setting

Incorporate a useful setting function from GX Configurator

The setting function of the intelligent function module is now integrated with GX Works2. The intelligent function module settings are managed in a GX Works2 project.

Also reflected on the I/O assignment parameters.

Add new module screen

Module is added to the project tree.

Set the A/D conversion system.

Explanation of item is shown as guidance.

Improving design and debug efficiency
**Displays device assignment of CC-Link**

A network configuration diagram is created by arranging device images on the CC-Link Configuration window using a mouse. A list of refresh devices assigned to CC-Link modules are displayed. CSP+*1, which contains partner product information, can be additionally imported.

*1 Refer to the CC-Link Association website (http://www.cc-link.org) for information on CSP+.

The equipment configuration diagram is created intuitively using CC-Link Configuration Window.

- Drag & drop to add devices to connect.
- Operations are easy since parameters and link scan time are automatically set.

Start from the toolbar.

Display the device assignment list.
- Programming is made while viewing device assignment.

The device assignment information can be exported to a CSV file and imported into the global label information, making it easy to utilize the information in label programming.
Easy connection via serial/Ethernet

Using the predefined protocol function of GX Works2, connection to a device you want to communicate with is quickly made just by choosing it from the predefined protocol library. Even if the external devices are not registered in the predefined protocol library, the desired protocol is easily created.

During serial communication, transmitted data, communication signals, and communication statuses can be checked without a line analyzer, making debugging easier.

Parameter setting

Improving design and debug efficiency
Set and monitor iQSS supporting devices

GX Works2*1 enables setting and monitoring of iQSS supporting devices, represented by vision sensors.

*1 GX Works2 with version 1.492N or later.

Examples for Ethernet supporting devices

- **Device list**: Devices connected to the Ethernet network are listed.
- **Configuration diagram**: Graphical images of devices connected to the Ethernet network are displayed.
- **Output window**: Status or error information of the selected iQSS supporting device is displayed.

Ethernet supporting devices on the network are automatically detected. Parameters for auto-detected devices can be set.
Debugging

1 Offline debugging without PLC

The simulation function is now integrated with GX Works2. The program operation is easily checked on a personal computer.

Debugging is performed with a PC right after programming without PLC. Checking operation while actually viewing it allows for design without rework.

POINT Up to four GX Works2 projects on a single PC are available to simulate concurrently.

2 Simulation function helps program debugging

A program is executed in a step-by-step method using the simulation function, finding program errors more easily.

Debugging is operated from the toolbar. Break points are set and checked in the docking window.

3 Watch windows for quick monitoring of device/label

Arbitrary devices/labels are registered and monitored, allowing required sections to be confirmed quickly.

Right-click the label and select "Register Watch" or drag and drop the label to register. Devices/labels of watch are saved and read in a CSV file. By saving only the frequently watched items in a CSV file, the required items are quickly confirmed and the debugging time shortened.

Display format of bit devices is selectable from binary, octal, decimal, hexadecimal, float, string, time, or forced I/O status, in accordance with the display purpose.

POINT The current value of the device/label is changed from the watch window.
4 Easier-to-use sampling trace

The device values before and after the designated conditions are established can be sampled and displayed in a timing chart. The trace results are saved in a CSV file allowing the device changes to be saved easily.

- Devices/labels are easily registered.
- ON/OFF switching of bit devices is checked in the chart.
- CSV file
- GX LogViewer screen
- Values of devices/labels at the time at the cursor location are listed.
- Changes of word devices are checked with the trend graph.
- Data saved in the CSV file are graphically displayed.

POINT

The sampling trace is also used in the simulation function.

5 Easier-to-view positioning trace function

Status of the speed command (axis speed), two-axis interpolation, and simultaneous start (two axes) are traced and displayed in a graph.

The value of each axis is visually checked during the online operation of the positioning module.

Trace function screen (Wave trace)  Trace function screen (Location trace)

6 Supporting the real-time monitor of GX LogViewer

The real-time monitor of the MELSEC-L CPU can be used by starting up GX LogViewer*2 from GX Works2*3.

*2 GX LogViewer version 1.40S or later
*3 GX Works2 version 1.521T or later
Operation and maintenance

Improved verification function

Verify data of an open project against data of saved project to display the result in an easy-to-view format. The parameters and the programs in the PLC connected to a personal computer also are verified against the data of an open project.

Verify data of an open project against data of saved project to display the result in an easy-to-view format. The parameters and the programs in the PLC connected to a personal computer also are verified against the data of an open project.

List matching and mismatching of program files.

Compare a saved project and the project being edited.

Detail Verify Result

Display detailed comparison results of mismatching programs.

Select comparison source

Select comparison target

Select mismatching portion.

Show mismatching portion.

Verification source (project being edited)

Verification target (saved project)

POINT

The verification result is saved to a CSV file to facilitate revision of design documents.
2 Prevent edit error by Read and Monitor modes

Erroneous operations in monitoring and searching are eliminated by supporting the Read and Monitor modes similar to GX Developer.

**Write mode/monitor (write mode)**
- Enter Symbol screen opens by pressing Enter key.

**Read mode/monitor mode**
- Find screen opens by pressing Enter key.

- **In the Write mode/monitor (write mode), online program change during conversion/compile is performed to accelerate work.**
- **Since programs cannot be edited in the read mode/monitor mode, erroneous editing of the ladder is prevented. The display jumps to the next search candidate each time the Enter key is pressed.**

**POINT**
- The same key operation as GX Developer is used to switch modes.

3 Dedicated monitoring for intelligent function module

While watching the ladder program, the buffer memory/XY signal of the intelligent function module is monitored in the docking window. Since the name of each buffer memory address is displayed, so there’s no need to refer to the manual to see for what the buffer memory is used.

- **Show the current values in an easy-to-view format.**
- **If there are several modules being monitored, press the tab to switch between the modules.**
Operation and maintenance

Visible System monitor function and PLC diagnostics

Operation status of the entire programmable controller system is clearly displayed. Each module's diagnosis and detailed information is displayed on the monitor for the entire system allowing the problem point to be confirmed quickly.

[Visible System monitor function and PLC diagnostics]

- Operation status of each module is checked at a glance.
- Error history of PLC and intelligent function module is viewed in time series.
- Error details and solution are displayed to handle troubles without the manual.
- Remote operation is performed for the programmable controller CPU.
- The system is diagnosed on a graphical screen which gives a feeling as if you are watching actual system and equipment.

[Module error history collection function]
Error history of PLC and intelligent function module is viewed in time series.

[PLC diagnostics]
Error history of PLC is quickly checked to respond to a failure immediately. Also remote operation is performed onto the programmable controller CPU to reset it or format its memory.

[Module's detailed information]
Display the module status, error details, and solution for the error. Immediate response is made to a module failure.

[Network diagnostics]
Display the status of the entire network visually so that a line trouble and module error are quickly found. Also, system monitoring of the PLC at another station is started via network.

- Disconnection or misconnection is easily found.
- A faulty station with a parameter setting error or an erroneous stop is also easily detected.
- The selected module's information is viewed.

POINT
Providing maintenance that meet your needs
5 Rich print functions

Items to print are specified in details. Also, multiple programs are printed in a single operation.

Add various information such as device comments, device memory and cross reference when printing.

Necessary information in detail is easily printed just by selecting print conditions.

6 Save and edit labels and parameters with Microsoft® Excel®

Various program data are exported as a CSV format file.

Exporting the program data as a CSV format file has the following advantages:

- Data are confirmed even on a personal computer that doesn’t have GX Works2.
- Data are saved in the personal computer.
- Data are mailed to a remote location.
- Secondary use of data, such as documentation and graphing, is possible using Microsoft® Excel®.
- Collaborate with other software by handling data in CSV format.

Example of I/O assignment setting CSV file

- Ladder program Write/read
- Label setting Write/read
- Parameter (I/O assignment setting, X/Y assignment confirmation) Write
- Verification results Write
- Sampling trace function Read (CSV file format that can be read with GX LogViewer)
- Watch window device/label list Write/read
- Product information, PLC diagnosis, module error history of system monitor for diagnosis function Write
- Device memory Write/read

Example of I/O assignment setting CSV file

<table>
<thead>
<tr>
<th>I/O assignment setting</th>
<th>CSV file</th>
</tr>
</thead>
<tbody>
<tr>
<td>I/O assignment</td>
<td></td>
</tr>
<tr>
<td>Details setting</td>
<td></td>
</tr>
<tr>
<td>Switch setting</td>
<td></td>
</tr>
<tr>
<td>Basic setting</td>
<td></td>
</tr>
</tbody>
</table>

Example of I/O assignment setting CSV file

<table>
<thead>
<tr>
<th>Brand</th>
<th>Type</th>
<th>Tag</th>
<th>Address</th>
<th>Value</th>
<th>Date</th>
<th>Time</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
Detailed project security management

Project safety is maintained by limiting user access for each program and parameter.

User registration (addition, change, and deletion)
The access level is managed for each user.

Access restriction
Setting security not only restricts an access to projects but also prevents the data created by the user from erroneous modification and/or disclosure to unauthorized users.

When multiple persons take charge in the same project, unauthorized changes to the project data are prevented.
2 Protects the program

Password registration
By setting a password for a program in the programmable controller CPU, the program is protected from unauthorized change and leakage.

Block password setting
By setting a block password, the FBs in a project which contains in-house software expertise are protected from theft and leakage.

3 Prevents unauthorized access

Security Key
By registering the devices that access the CPU, unauthorized access from non-registered devices is prevented. Avoid unnecessary accesses, and protect your valuable program assets.

Remote password
By setting a remote password, unauthorized access of the programmable controller from Ethernet or a public line is prevented.
Project

1 Back up and restore a project easily

By registering the project revision history, the project is easily recovered to their original state. Projects with a registered history are compared.

- Display who changed what, when, and how.
- Register to the Revision list
- Recovery
  A project is returned to state at a point in the past by choosing the state from the project revision history.

- It is unnecessary to save projects under different names for back up.

2 Program title display guides you

In addition to the program name, the program title is displayed, allowing the program contents to be understood at a glance.

- Display the program name only.
- Add a title to the program. Describe the program with up to 32 characters.
- Display the program name along with the title.
3 Tree view offers easy-to-understand processing flow

The statements appended to program processes are displayed on a tree view for easy access to them. The processing flow and structure of the program are easily understood and jump to each process quickly.

4 Handle multiple program parts with FX Series

The PLC program can be created with multiple program parts so the program configuration can be seen and parts can be easily used in other projects.
Facilitating project management

Project

5 Fully utilize the wide and easy-to-read screen

The settings for frequently connected devices can be saved and reused whenever necessary. This eliminates the need for copying and modifying projects for different connection targets.

6 Easy connection destination setting

The settings for frequently connected devices can be saved and reused whenever necessary. This eliminates the need for copying and modifying projects for different connection targets.
7 Customize keyboard key arrangement

The user can customize keyboard shortcuts. The customized setting can also be saved and exported as a file.

- F5 and F6 keys are far and difficult to use.
- Any functions can be assigned to the shortcut keys.
- Change from \[ \text{F5} \] to \( A \) and from \[ \text{F6} \] to \( B \).

8 Help information guides you operation method

Displaying Help information with a single keystroke makes it easier to confirm the operation.

- Shortcut keys can be assigned to the menus that have no shortcuts assigned by default.
- Frequently used help screens are bookmarked.
Make it easy using FB

What is a Function Block (FB)?
Function Block (FB) is a ladder block frequently used in a sequence program and grouped as a part for reuse within the program.
FB improves program development efficiency and reduces programming errors to ensure higher program quality.

Making parts
Example) This count process program turns the output signal (Y12) ON after the input signal (X1) turns on for 12 times.

Program components to be grouped as a part

Advantages of using FB
Advantage 1: Easier programming
A sequence program is created just by dragging and dropping FBs. This significantly reduces program development processes.
**Advantage 1: Improved readability**
Using FBs in a sequence program improves its readability because the program only consists of "boxes" (FBs), inputs, and outputs.

**Advantage 2: Reusability**
By grouping frequently used program components as parts, they are reused as many times as required. You are no longer required to copy an existing program and then modify devices.

**Advantage 3: Higher quality**
By grouping frequently used program components as parts (FBs) and reusing them, program quality will be uniform and independent from the skill levels of the developers.

**Advantage 4: Theft prevention**
By grouping important sequence program components involving technology expertise as a part (FB) and protecting it with a password, information leak is prevented.
Making parts in program

Useful FB libraries supplied by vendors

What is FB library?
An FB library is a collection of FB parts which is used in simple projects of GX Works2. By using these FBs, settings and operation of the MELSEC-Q/L modules as well as partner products are configured.

In addition to the custom-made FBs, useful FB libraries supplied by our partners are available. FBs are also offered for iQSS partner products. The MELSOFT Library has more than 1500 FBs from thirteen companies, and is scheduled to continue expanding.

Example of MELSEC-Q/L module

Example of partner product
When how to use an FB is not certain, right-click it on the FB Selection Window to display the help information.
1 Structured programming

From a roll of ladder program to structured programming
By using a Structured project, a large and complicated program is structured and divided into parts according to the processing details, control details, and functionalities.
A “roll” of ladder program tends to be difficult to view the entire processing. On the contrary, by designing a compact program module for each process in structured programming, coding and debugging will be more efficient and the program quality will be also improved.
It also supports complicated structured programming by allowing for a nesting structure which puts a FB in another FB.

Structured ladder FBs are nested.

2 International Standard IEC 61131-3 compliant

GX Works2 conforms to the international standard IEC 61131-3.

Graphical language
Ladder language
This graphical language represents a program as a ladder which consists of contact points and coils.

Structured ladder/FBD language
The structured ladder language is a graphical language used according to the design technique of the relay circuit. The structured ladder allows for nesting FBs. The FBD language graphically represents a ladder by connecting functions and/or FBs.
SFC language
A graphical language for comprehensively describing sequence control.
This language pairs a step which describes a process with a transition condition to move to the next step.
The step and transition condition are described in the ladder language.

Text language
ST (structured text) language
The ST language allows for describing control with selection divergence using conditional statements and loops using iteration syntax, similar to high-level languages such as C. This helps creating comprehensive and concise programs.

3 Improve development efficiency using user libraries
With structured projects, frequently-used programs are saved in user library files separately from the project. By importing these user library files into a project, the program is developed efficiently without having to create it from scratch.

4 Label programming
Labels are used to give easily identifiable names such as “Production line start signal” or “Start parts supply” to devices.

Using labels eliminates device assignment upon system changes.
Implement a seamless engineering environment

MELSOFT iQ Works is an integrated engineering software product, consisting of GX Works3, GX Works2, MT Works2, GT Works3, RT ToolBox2 mini, and FR Configurator2. By sharing information such as system designs and programming as the entire control system, the system design and programming efficiency are improved, and total cost reduction is achieved.

MELSOFT Navigator

In combination with GX Works3, GX Works2, MT Works2, GT Works3, and RT ToolBox2 mini, this software performs upstream system design and inter-software operation. It provides such convenient functions as system configuration design, batch setting of parameters, system labeling, and batch reading.

Workspace management

Multiple project data (programmable controller projects, motion controller projects, GOT projects, and robot controller projects) are managed totally using a workspace.

- **System configuration diagram**
  The overall system is represented graphically with the following configuration diagrams:
  - "Network configuration diagram"
  - "Module configuration diagrams" showing the placement of modules
  - Field network configuration diagrams
  ("CC IE Field configurations", "CC-Link configurations", "Ethernet configurations", "AnyWireASLINK configurations")
  The diagram is easily created by dragging and dropping the modules, and various checks such as power supply capacity check are also performed.

- **System label**
  System labels are set in one place, reducing the number of processes and preventing setting errors. The set system labels are shared and used with all related projects.
2 Parameter settings for individual tools are no longer required

The information set into the system configuration drawing are reflected in a batch onto the GX Works3, GX Works2, MT Works2 and GT Works 3 projects. *1

There’s no need to launch each software and check the integrity.

*1 You are still required to set detailed parameters in each tool.

Parameter setting information in system configuration diagram

3 Shares labels and automatically changes all related projects

With MELSOFT Navigator, labels are shared by the PLC, motion controller and GOT.

For example, if a device assignment is changed in the PLC project, the changes are automatically reflected onto the motion controller and GOT projects.
Collaboration with FA devices

Supporting next-generation high-speed CPUs

GX Works2 now supports the universal model high-speed type QCPU module which has a greatly improved operation and processing speed for basic operations, structural instructions and FB call functions. Use GX Works2 to easily control the next-generation high-speed CPU equipped with advanced functions.

**GX Works2 support**
- Universal model high-speed type QCPU *1
  - Q03UDVCPU, Q04UDVCPU, Q06UDVCPU
  - Q13UDVCPU, Q26UDVCPU

*1 Supported by GX Works2 version 1.98C and higher.

Reduce tact-time with super fast processing.

Basic operation processing speed (LD instruction) 1.9 ns

Coordination with PX Developer supports process applications

By coordinating with PX Developer*2, sequence and loop control programs can be created for process/redundant CPU.

*2 PX Developer with version 1.36N or later

Process system programming example

GX Works2
- Create and edit tags
- Create and edit loop control programs (FBD)

PX Developer
- Create and edit tags
- Create and edit loop control programs (FBD)

MELSEC PROCESS

GOT (HMI)

Process CPU

Redundant CPU
Batch control of various FA devices

Collaboration with various FA devices is now more powerful. GX Works2 is used to set and monitor various FA devices on any platform. Improve your product site’s efficiency by integrating with high-performance and high-function devices.

### Standard simple motion module setting tool

Configuration, start up and adjustment, operation and maintenance of the simple motion module are powerfully supported.

- System configuration setting
- Synchronous control parameter setting
- Digital oscilloscope

### Energy-saving supported

The power measurement module’s parameters are set from the GX Works2 without a manual.
In addition, the parameter settings and measured value are confirmed easily.
(Intelligent function module monitor supported)
Swift startup using the GX Works2 supports energy conservation of the system.

### Sensor integration iQss

Parameters for the iQ Sensor Solution (iQSS) compatible partner sensor products are set and monitored, and the sensor’s connection state and current values are confirmed with graphically displays, allowing troubles to be handled quickly.
CC-Link Partner Association (CLPA) actively promotes the worldwide adoption of CC-Link networks

From promotion to specification development, CLPA actively supports CC-Link

CC-Link Partner Association (CLPA) was established to promote the worldwide adoption of the CC-Link open field network. By conducting promotional activities, such as organizing trade shows and seminars, implementing conformance tests, and providing catalogs, brochures, and website information, CLPA has been successfully increasing the number of CC-Link partner manufacturers and CC-Link compatible products. CLPA takes a major role in the globalization of CC-Link.

The latest CC-Link information is posted on the website.

URL:http://www.cc-link.org

CC-Link continues to increase its global influence

CC-Link is supported globally by CLPA. With offices throughout the world, support for partner companies can be found locally. Each regional CLPA office undertakes various support and promotional activities to further the influence of the network in that part of the world. For companies looking to increase their presence in Asia, CLPA is well placed to assist these efforts through offices in all major Asian economies.
Extensive global support coverage providing expert help whenever needed

### Global FA centers

**China**
- **Shanghai FA Center**
  - MITSUBISHI ELECTRIC AUTOMATION (CHINA) LTD.
  - No.1386 Hongqiao Road, Mitsubishi Electric Automation Center, Shanghai, China
  - Tel: +86-21-2322-3030 / Fax: +86-21-2322-3000
- **Beijing FA Center**
  - MITSUBISHI ELECTRIC AUTOMATION (CHINA) LTD.
  - Beijing Branch
  - Unit 901, 9F, Office Tower 1, Henderson Centre, 18 Jiangoumennei Avenue, Dongcheng District, Beijing, China
  - Tel: +86-10-6618-8830 / Fax: +86-10-6618-2938
- **Tianjin FA Center**
  - MITSUBISHI ELECTRIC AUTOMATION (CHINA) LTD.
  - Tianjin Branch
  - Room 2003 City Tower, No.35, Youyi Road, Hexi District, Tianjin, China
  - Tel: +86-22-2813-1015 / Fax: +86-22-2813-1017
- **Guangzhou FA Center**
  - MITSUBISHI ELECTRIC AUTOMATION (CHINA) LTD.
  - Guangzhou Branch
  - Room 1609, North Tower, The Hub Center, No.1068, Xingang East Road, Haizhu District, Guangzhou, China
  - Tel: +86-20-8923-6730 / Fax: +86-20-8923-6715

**Taiwan**
- **Taichung FA Center**
  - MITSUBISHI ELECTRIC TAIWAN CO., LTD.
  - No.8-1, Industrial 16th Road, Taichung Industrial Park, Taichung City 40768, Taiwan, R.O.C.
  - Tel: +886-4-2359-0868 / Fax: +886-4-2359-0869
- **Taipei FA Center**
  - SETSUYO ENTERPRISE CO., LTD.
  - 3F, No.105, Wugong 3rd Road, Wugu District, New Taipei City 24665, Taiwan, R.O.C.
  - Tel: +886-2-2299-9917 / Fax: +886-2-2299-9903

**Korea**
- **Korea FA Center**
  - MITSUBISHI ELECTRIC AUTOMATION KOREA CO., LTD.
  - TP-9F, Gangoos Hangang Xi-tower A, 401, Yangcheon-ro, Gangseo-Gu, Seoul 157-801, Korea
  - Tel: +82-2-3660-9065 / Fax: +82-2-3663-0475

**Thailand**
- **Thailand FA Center**
  - MITSUBISHI ELECTRIC FACTORY AUTOMATION (THAILAND) CO., LTD.
  - 12th Floor, SV.City Building, Office Tower 1, No.896/19 and 20 Rama 3 Road, Kwaeng Bangbonngop, Khet Yannawa, Bangkok 10120, Thailand
  - Tel: +66-2682-6522 / Fax: +66-2682-6020

**ASEAN**
- **ASEAN FA Center**
  - MITSUBISHI ELECTRIC ASIA PTE. LTD.
  - 307, Alexandra Road, Mitsubishi Electric Building, Singapore 159943
  - Tel: +65-6470-2480 / Fax: +65-6476-7439

**Indonesia**
- **Indonesia FA Center**
  - PT. MITSUBISHI ELECTRIC INDONESIA
  - Cikarang Office
  - Jl. Kenari Raya Blok G2-07A Delta Silicon 5, Lippo Cikarang Bekasi 17550, Indonesia
  - Tel: +62-21-2961-7777 / Fax: +62-21-2961-7794

**Vietnam**
- **Hanoi FA Center**
  - MITSUBISHI ELECTRIC VIETNAM COMPANY LIMITED
  - Hanoi Branch
  - 6-Floor, Deltec Tower, 8 Ton That Thuyet Street, My Dinh 2 Ward, Nam Tu Liem District, Hanoi, Vietnam
  - Tel: +84-4-3937-8075 / Fax: +84-4-3937-8076
- **Ho Chi Minh FA Center**
  - MITSUBISHI ELECTRIC VIETNAM COMPANY LIMITED
  - Unit 01-04, 10th Floor, Vincom Center, 72 Le Thanh Ton Street, District 1, Ho Chi Minh City, Vietnam
  - Tel: +8-9-3910-5945 / Fax: +8-9-3910-5947

**India**
- **India FA Center**
  - MITSUBISHI ELECTRIC INDIA PVT. LTD.
  - Bengaluru Branch
  - Prestige Emerald, 6th Floor, Municipal No. 2, Madras Bank Road (Lavelle Road), Bangalore-560001, Karnataka, India
  - Tel: +91-80-4020-1600 / Fax: +91-80-4020-1699
- **India Chennai FA Center**
  - MITSUBISHI ELECTRIC INDIA PVT. LTD.
  - Chennai Branch
  - “Ciltons Corporate Centre” No.1, Vivekananda Road, Siruvanas Nagar, Chennai, 600031, Tamil Nadu, India
  - Tel: +91-44-4554-8772 / Fax: +91-44-4554-8773
- **India Ahmedabad FA Center**
  - MITSUBISHI ELECTRIC INDIA PVT. LTD.
  - Ahmedabad Branch
  - B/4, 3rd Floor, Safal Profitaire, Corporate Road, Prabhatnagar, Satellite, Ahmedabad, Gujarat-380015, India
  - Tel: +91-79-6512-0963

**America**
- **North America FA Center**
  - MITSUBISHI ELECTRIC AUTOMATION, INC.
  - 500 Corporate Woods Parkway, Vernon Hills, IL 60061, U.S.A.
  - Tel: +1-847-478-2469 / Fax: +1-847-478-2253

**Mexico**
- **Mexico FA Center**
  - MITSUBISHI ELECTRIC AUTOMATION, INC.
  - Mexico Branch
  - C/Manuel Escobedo #69, Col. Zona Industrial, Tlalnepantla Edo, C.P.54300, Mexico
  - Tel: +52-55-3067-7511

**Brazil**
- **Brazil FA Center**
  - MITSUBISHI ELECTRIC DO BRASIL COMÉRCIO E SERVIÇOS LTDA.
  - Rua Jussara, 1750-Bloco B Anexo, Jardim Santa Cecília, CEP 04645-070, Barueri-SP, Brazil
  - Tel: +55-11-4689-3000 / Fax: +55-11-4689-3016
- **Brazil Boituva FA Center**
  - MELCO CNC DO BRASIL COMÉRCIO E SERVIÇOS S.A.
  - Acesse, Jose Sartorelli, KM 2.1 CEP 18555-000 Boituva-SP, Brazil
  - Tel: +55-15-3363-9900 / Fax: +55-15-3363-9911

**Europe**
- **Europe FA Center**
  - MITSUBISHI ELECTRIC EUROPE B.V.
  - Polish Branch
  - ul. Królewskia 50, 32-083 Bialystok, Poland
  - Tel: +48-12-630-47-00 / Fax: +48-12-630-47-01
- **Germany FA Center**
  - MITSUBISHI ELECTRIC EUROPE B.V.
  - German Branch
  - Großer Strasse B8, D-40880 Ratingen, Germany
  - Tel: +49-2102-486-0 / Fax: +49-2102-486-1120
- **UK FA Center**
  - MITSUBISHI ELECTRIC EUROPE B.V. UK Branch
  - Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, U.K.
  - Tel: +44-1707-28-7870 / Fax: +44-1707-27-9695
- **Czech Republic FA Center**
  - MITSUBISHI ELECTRIC EUROPE B.V.
  - Czech Branch
  - Aveiri Business Park, Radicka 751/113a, 158 00 Praha 5, Czech Republic
  - Tel: +420-251-551-470 / Fax: +420-251-551-471
- **Russia FA Center**
  - MITSUBISHI ELECTRIC EUROPE B.V.
  - Russian Branch
  - St.Petersburg office
  - Piskarevskiy pr 2, Ord 2, St. Petersburg, Russia
  - Tel: +7-812-633-3470 / Fax: +7-812-633-3499
- **Turkey FA Center**
  - MITSUBISHI ELECTRIC TURKEY A.Ş.
  - Istanbul Branch
  - Sentei Mahalleli Nütük Sokak No:5, TR-34775
  - Umraniye, Istanbul, Turkey
  - Tel: +90-216-526-3990 / Fax: +90-216-526-3995
Specifications/Products

### Operating Environment

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>Microsoft® Windows® 8.1 Operating System ¹, Microsoft® Windows® 7 Enterprise Operating System ²</td>
</tr>
<tr>
<td>CPU</td>
<td>Intel® Core™ i7 Dual Core Processor 2 GHz or more</td>
</tr>
<tr>
<td>Required memory</td>
<td>Recommended 1 GB or more</td>
</tr>
<tr>
<td>Available hard disk capacity</td>
<td>When installing GX Works2: HDD available capacity is 2.5 GB or more. When operating GX Works2: Virtual memory available capacity is 512 MB or more.</td>
</tr>
<tr>
<td>Disk drive</td>
<td>CD-ROM supported disk drive</td>
</tr>
<tr>
<td>Monitor</td>
<td>Resolution 1024 x 768 pixels or higher</td>
</tr>
</tbody>
</table>

¹ 64-bit edition supported

### Supported Programmable Controller CPU

<table>
<thead>
<tr>
<th>Model</th>
<th>Series name</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>MELSEC-Q Series</td>
<td>Q00CPU, Q00CPU, Q01CPU</td>
<td>Q00CPU, Q02CPU, Q02CPU, Q06CPU, Q124CPU, Q245CPU</td>
</tr>
<tr>
<td>High-performance model</td>
<td>Q01CPU, Q02CPU, Q06CPU, Q124CPU, Q245CPU</td>
<td>Q01CPU, Q02CPU, Q06CPU, Q124CPU, Q245CPU</td>
</tr>
<tr>
<td>Universal model</td>
<td>Q02CPU, Q02CPU, Q04CPU, Q06CPU, Q08CPU, Q10CPU, Q12CPU, Q24CPU</td>
<td>Q02CPU, Q02CPU, Q04CPU, Q06CPU, Q10CPU, Q12CPU, Q24CPU</td>
</tr>
<tr>
<td>Remote I/O</td>
<td>Q72LP2S, Q72BR1S</td>
<td>Q72LP2S, Q72BR1S</td>
</tr>
<tr>
<td>Process CPU</td>
<td>Q02CPU, Q06CPU, Q124CPU, Q245CPU</td>
<td>Q02CPU, Q06CPU, Q124CPU, Q245CPU</td>
</tr>
<tr>
<td>Redundant CPU</td>
<td>Q124CPU, Q245CPU</td>
<td>Q124CPU, Q245CPU</td>
</tr>
</tbody>
</table>

### Product Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>MELSOFT GX Works3</td>
<td>SW1DND-GXW3-E</td>
<td>Controller Programming Software: MELSOFT GX Works3, MITSUBISHI ELECTRIC FA Library Comes with GX Works2 and GX Developer</td>
</tr>
<tr>
<td>MELSOFT GX Works2</td>
<td>SW1DNC-GXW2-E</td>
<td>Controller Programming Software Comes with GX Developer</td>
</tr>
</tbody>
</table>

¹³ For detailed information about supported modules, refer to the manuals of the relevant software package.

### Related Software Products

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>PX Developer</td>
<td>SW1DSC-FBDQ-E</td>
<td>FBD software package for process control</td>
</tr>
<tr>
<td></td>
<td>SW1DNC-FBDMQN-E</td>
<td>Process control FBD software package monitoring tool</td>
</tr>
<tr>
<td>GX Developer</td>
<td>SW8D5C-GPPW-E</td>
<td>MELSEC programmable controller programming software</td>
</tr>
<tr>
<td></td>
<td>SW8D5C-GPPW-EV</td>
<td>MELSEC programmable controller programming software (upgrade)</td>
</tr>
</tbody>
</table>

**Available for free⁴**

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>GX LogViewer</td>
<td>SW1DNN-VIEWER-E</td>
<td>Logging data display and analysis tool</td>
</tr>
</tbody>
</table>

⁴ To receive a copy of GX LogViewer, contact your local Mitsubishi Electric representative.
### Manuals

<table>
<thead>
<tr>
<th>Manual Name</th>
<th>Supply Status</th>
<th>IB/SH No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GX Works2 Version 1 Operating Manual (Common)</td>
<td>Sold separately</td>
<td>SH-080779ENG</td>
</tr>
<tr>
<td>Explains the system configuration of GX Works2 and the functions common to Simple project and Structured project such as parameter setting, operation method for the online function.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GX Works2 Version 1 Operating Manual (Simple Project)</td>
<td>Sold separately</td>
<td>SH-080780ENG</td>
</tr>
<tr>
<td>Explains methods for such as creating and monitoring programs in Simple project of GX Works2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GX Works2 Version 1 Operating Manual (Simple Project, Function Blocks)</td>
<td>Sold separately</td>
<td>SH-080984ENG</td>
</tr>
<tr>
<td>Explains methods for such as creating function blocks, pasting function blocks to sequence programs, and operating FB library in Simple project of GX Works2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GX Works2 Version 1 Operating Manual (Structured Project)</td>
<td>Sold separately</td>
<td>SH-080781ENG</td>
</tr>
<tr>
<td>Explains methods for such as creating and monitoring programs in Structured project of GX Works2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GX Works2 Version 1 Operating Manual (Intelligent Function Module)</td>
<td>Sold separately</td>
<td>SH-080921ENG</td>
</tr>
<tr>
<td>Explains methods of intelligent function module for such as parameter setting, monitoring programs, and predefined protocol support function in GX Works2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GX Works2 Beginner’s Manual (Simple Project)</td>
<td>Sold separately</td>
<td>SH-080787ENG</td>
</tr>
<tr>
<td>Explains fundamental methods for such as creating, editing, and monitoring programs in Simple project for users inexperienced with GX Works2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GX Works2 Beginner’s Manual (Structured Project)</td>
<td>Sold separately</td>
<td>SH-080788ENG</td>
</tr>
<tr>
<td>Explains fundamental methods for such as creating, editing, and monitoring programs in Structured project for users inexperienced with GX Works2.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The operating manuals are included on the CD-ROM with the software package.

Manuals in printed form are sold separately for single purchases.

Order a manual by quoting the manual number (model code) listed in the upper table.
**FA Products**

**PLC | MELSEC-Q Series Universal Model**

Introducing the high-speed QCPU (QnUDVCPU) for faster processing of large data volumes.

- Realize high-speed, high-accuracy machine control with various iQ Platform compatible controllers and multiple CPUs.
- Easily connect to GOTs and Programming tools using built-in Ethernet port.
- 25 models from 10K steps small capacity to 1000K steps large capacity, are available.
- Seamless communication and flexible integration at any network level.

<table>
<thead>
<tr>
<th>Product Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program capacity</strong></td>
</tr>
<tr>
<td><strong>Number of I/O ports (I/O)</strong></td>
</tr>
<tr>
<td><strong>Basic instruction processing speed (LD instruction)</strong></td>
</tr>
<tr>
<td><strong>External connection interface</strong></td>
</tr>
<tr>
<td><strong>Function module</strong></td>
</tr>
<tr>
<td><strong>Module extension style</strong></td>
</tr>
<tr>
<td><strong>Network</strong></td>
</tr>
</tbody>
</table>

**PLC | MELSEC-L Series**

“Light & Flexible” condensing various functions easily and flexibly.

- CPU equipped as a standard with various functions including counter, positioning and CC-Link.
- The base-less structure with high degree of freedom saves space in the control panel.
- Easily confirm the system status and change the settings with the display unit.
- Ten models are available in program capacities from 20 k steps to 260 k steps.

<table>
<thead>
<tr>
<th>Product specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program capacity</strong></td>
</tr>
<tr>
<td><strong>Number of input/output points [X/Y]</strong></td>
</tr>
<tr>
<td><strong>Number of input/output device points [X/Y]</strong></td>
</tr>
<tr>
<td><strong>Basic instruction processing speed (LD instruction)</strong></td>
</tr>
<tr>
<td><strong>External connection interface</strong></td>
</tr>
<tr>
<td><strong>Function modules</strong></td>
</tr>
<tr>
<td><strong>Unit expansion style</strong></td>
</tr>
<tr>
<td><strong>Network</strong></td>
</tr>
</tbody>
</table>

**HMI | Graphic Operation Terminal GOT2000 Series GT27 Model**

To the top of HMIs with further user-friendly, satisfactory standard features.

- Comfortable screen operation even if high-load processing (e.g. logging, device data transfer) is running. (Monitoring performance is twice faster than GT16)
- Actual usable space without using a SD card is expanded to 128MB for more flexible screen design.
- Multi-touch features, two-point press, and scroll operations for more user-friendliness.
- Outline font and PNG images for clear, beautiful screen display.

<table>
<thead>
<tr>
<th>Product Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Screen size</strong></td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
</tr>
<tr>
<td><strong>Intensity adjustment</strong></td>
</tr>
<tr>
<td><strong>Touch panel type</strong></td>
</tr>
<tr>
<td><strong>Built-in interface</strong></td>
</tr>
<tr>
<td><strong>Applicable software</strong></td>
</tr>
<tr>
<td><strong>Input power supply voltage</strong></td>
</tr>
</tbody>
</table>
Inverter | FR-A800 Series
---|---
**High-functionality, high-performance inverter**
- Realize even higher responsiveness during real sensor-less vector control or vector control, and achieve faster operating frequencies.
- The latest automatic tuning function supports various induction motors and also sensor-less PM motors.
- The standard model is compatible with EU Safety Standards STO (Pld. SIL2). Add options to support higher level safety standards.
- Control and monitor inverters via CC-Link/CC-Link IE Field Network (option interface).

**Product Specifications**
- **Inverter capacity**: 200V class: 0.4kW to 90kW, 400V class: 0.4kW to 500kW
- **Control method**: High-carrier frequency PWM control (Select from V/F, advanced magnetic flux vector, real sensorless vector or PM sensorless vector control), vector control (when using options)
- **Output frequency range**: 0.2 to 590Hz (upper limit is 400Hz when using advanced magnetic flux vector control, real sensorless vector control, vector control or PM sensorless vector control)
- **Regenerative braking torque (Maximum allowable duty)**:
  - 11k to 55k (20% continuous)
  - 75k or more (10% continuous), 400V class: 0.4kW to 7.5k (100% at 2%ED)
- **Starting torque**: 200% 0.3Hz (3.7k or less), 150% 0.3Hz (5.5k or more) (when using real sensorless vector, vector control)

Sensor-less Servo | FR-E700EX Series, MM-GKR Series
---|---
**Compact and high-function drive unit, low-inertia small capacity sensor-less PM motor**
- Use PM sensor-less vector control to control dedicated PM motors with high accuracy without an encoder.
- High-accuracy speed control (speed fluctuation rate ±0.05%) and positioning control are supported.
- The dedicated PM motor (MM-GKR) is quiet as it has no cooling fan. The compact and lightweight unit also supports reduction gears.
- The standard model supports RS-485 communication, CC-Link communication is supported with an additional option.

**Product Specifications**
- **Drive unit / motor capacity**: 200V class: 0.1kW to 0.75kW
- **Control method**: PM sensor-less vector control (low speed range: high frequency superimposition control)
- **Rated speed**: 3000r/min
- **Speed fluctuation rate**: ±0.05% (at 0 to 100% load fluctuation)
- **Position control**: (Command input method) The point table method and zero point return enable position control with absolute position commands
- **Positioning accuracy**: ±1.8° (machine angle: equivalent to 200 pulses/rev resolution, input voltage 200V, wiring length within 5m)
- **Starting torque**: 200% (default value)
- **Communication specifications**: Built-in: RS-485 communication (Mitsubishi inverter protocol, Modbus-RTU protocol), option: CC-Link communication

AC Servo | Mitsubishi General-Purpose AC Servo MELSERVO-J4 Series
---|---
**Industry-leading level of high performance servo**
- Industry-leading level of basic performance: Speed frequency response (2.5kHz), 4,000,000 (4,194,304/pv) encoder
- Advanced one-touch tuning function achieves the one-touch adjustment of advanced vibration suppression control II, etc.
- Equipped with large capacity drive recorder and machine diagnosis function for easy maintenance.
- 2-axis and 3-axis servo amplifiers are available for energy-conservative, space-saving, and low-cost machines.

**Product Specifications**
- **Power supply specifications**: 1-phase/3-phase 200V AC, 1-phase 100V AC, 3-phase 400V AC
- **Command interface**: SSCNET II/H, SSCNET II (compatible in J3 compatibility mode), CC-Link IE Field Network interface with Motion, pulse train, analog
- **Control mode**: Position/Speed/Torque/Positioning function/Fully closed loop
- **Speed frequency response**: 2.5kHz
- **Tuning function**: Advanced one-touch tuning, advanced vibration suppression control II, robust filter, etc.
- **Functional safety**: Conforms to functions of IEC/EN 61800-5-2, STO: Category 3 PL d, SIL 2
- **Compatible servo motor**: Rotary servo motor (rated output: 0.05 to 55kW), linear servo motor (continuous thrust 50 to 3000N), direct drive motor (rated torque: 2 to 240N•m)
Magnetic Starter | MS-T Series

Exceed your expectations.
○ 10A frame model is over 16% smaller with a width of just 36mm!
○ New integrated terminal covers.
○ Reduce your coil inventory by up to 50%.
○ Be certified to the highest international levels while work is ongoing to gain other country.

Product specifications
| Frame | 10 A to 32 A |
| Applicable standards | Certification to various standards including IEC, JIS, CE, UL, TÜV, CCC. |
| Terminal cover | Standard terminal cover improves safety, simplifies ordering, and reduces inventory, etc. |
| Improved wiring | Wiring and operability are improved with streamlined wiring terminal BC specifications. |
| Operation coil rating | Wide range of operation coil ratings reduces number of coil types from 14 (N Series) to 7 types and simplifies selection. |
| Option units | Diverse lineup includes Auxiliary Contact Block, Operation Coil Surge Absorber Unit, Mechanical Interlock Unit. |

Robot | MELFA F Series

High speed, high precision and high reliability industrial robot
○ Compact body and slim arm design, allowing operating area to be expanded and load capacity increased.
○ The fastest in its class using high performance motors and unique driver control technology.
○ Improved flexibility for robot layout design considerations.
○ Optimal motor control tuning set automatically based on operating position, posture, and load conditions.

Product Specifications
| Degrees of freedom | Vertical:6  Horizontal:4 |
| Installation | Vertical:Floor-mount, ceiling mount, wall mount (Range of motion for J1 is limited)  Horizontal:Floor-mount |
| Maximum load capacity | Vertical:2-20kg  Horizontal:3-20kg |
| Maximum reach radius | Vertical:500-1500mm  Horizontal:350-1,000mm |

CNC | Mitsubishi Numerical Control Unit C70 Series

iQ Platform compatible CNC to provide TCO reduction effect.
○ A CNC structured in building block method on iQ Platform.
○ High performance CNC integrated with high-speed PLC offers high-speed control to reduce cycle time.
○ A wide variety of FA products helps construct flexible lines.

Product specifications
| Number of control axes (NC axis + spindle + PLC axis) | 16 axes |
| Maximum number of part systems | Machining center system: 7 systems, Lathe system: 3 systems |
| Maximum number of NC axes per part system | 8 axes |
| Maximum program capacity | 2,000 KB (5,120 m) |
| Maximum number of files to store | 124 files/252 files |
| Number of input/output points | 4,096 points |
| Safety observation function | Safety signal comparison function, speed monitoring function, duplexed emergency stop |
Precautions before use

This publication explains the typical features and functions of the products herein and does not provide restrictions and other information related to usage and module combinations. Before using the products, always read the product user manuals. Mitsubishi Electric will not be held liable for damage caused by factors found not to be the cause of Mitsubishi Electric; opportunity loss or lost profits caused by faults in Mitsubishi Electric products; damage, secondary damage, or accident compensation, whether foreseeable or not, caused by special factors; damage to products other than Mitsubishi Electric products; and to other duties.

For safe use

- To use the products given in this publication properly, always read the relevant manuals before use.
- The products have been manufactured as general-purpose parts for general industries, and have not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the products for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- The products have been manufactured under strict quality control. However, when installing the products where major accidents or losses could occur if the products fail, install appropriate backup or fail-safe functions in the system.
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